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Sequence Listing was accepted.

See attached Validation Report.

If you need help call the Patent Electronic Business Center at (866)  
217-9197 (toll free).

Reviewer: Keisha Douglas

Timestamp: [year=2007; month=12; day=18; hr=18; min=54; sec=18; ms=564;  
]

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Application No: 10566322 Version No: 1.1

**Input Set:****Output Set:**

**Started:** 2007-12-18 18:53:15.324  
**Finished:** 2007-12-18 18:53:20.309  
**Elapsed:** 0 hr(s) 0 min(s) 4 sec(s) 985 ms  
**Total Warnings:** 194  
**Total Errors:** 0  
**No. of SeqIDs Defined:** 256  
**Actual SeqID Count:** 256

Error code	Error Description
W 402	Undefined organism found in <213> in SEQ ID (41)
W 402	Undefined organism found in <213> in SEQ ID (42)
W 402	Undefined organism found in <213> in SEQ ID (43)
W 402	Undefined organism found in <213> in SEQ ID (44)
W 402	Undefined organism found in <213> in SEQ ID (45)
W 402	Undefined organism found in <213> in SEQ ID (46)
W 402	Undefined organism found in <213> in SEQ ID (47)
W 402	Undefined organism found in <213> in SEQ ID (48)
W 402	Undefined organism found in <213> in SEQ ID (49)
W 402	Undefined organism found in <213> in SEQ ID (50)
W 402	Undefined organism found in <213> in SEQ ID (51)
W 402	Undefined organism found in <213> in SEQ ID (52)
W 402	Undefined organism found in <213> in SEQ ID (53)
W 402	Undefined organism found in <213> in SEQ ID (54)
W 402	Undefined organism found in <213> in SEQ ID (55)
W 402	Undefined organism found in <213> in SEQ ID (56)
W 402	Undefined organism found in <213> in SEQ ID (57)
W 402	Undefined organism found in <213> in SEQ ID (58)
W 213	Artificial or Unknown found in <213> in SEQ ID (59)
W 213	Artificial or Unknown found in <213> in SEQ ID (60)

**Input Set:**

**Output Set:**

**Started:** 2007-12-18 18:53:15.324  
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**Total Warnings:** 194  
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Error code	Error Description
W 213	Artificial or Unknown found in <213> in SEQ ID (61)
W 213	Artificial or Unknown found in <213> in SEQ ID (62)
W 213	Artificial or Unknown found in <213> in SEQ ID (63)
W 213	Artificial or Unknown found in <213> in SEQ ID (64)
W 213	Artificial or Unknown found in <213> in SEQ ID (68)
W 213	Artificial or Unknown found in <213> in SEQ ID (70)
W 213	Artificial or Unknown found in <213> in SEQ ID (71)
W 213	Artificial or Unknown found in <213> in SEQ ID (72)
W 213	Artificial or Unknown found in <213> in SEQ ID (73)
W 213	Artificial or Unknown found in <213> in SEQ ID (74)
W 213	Artificial or Unknown found in <213> in SEQ ID (75)
W 213	Artificial or Unknown found in <213> in SEQ ID (76)
W 213	Artificial or Unknown found in <213> in SEQ ID (77)
W 213	Artificial or Unknown found in <213> in SEQ ID (78)
W 213	Artificial or Unknown found in <213> in SEQ ID (79)
W 213	Artificial or Unknown found in <213> in SEQ ID (80)
W 213	Artificial or Unknown found in <213> in SEQ ID (81)
W 213	Artificial or Unknown found in <213> in SEQ ID (82) This error has occurred more than 20 times, will not be displayed
W 402	Undefined organism found in <213> in SEQ ID (102)
W 402	Undefined organism found in <213> in SEQ ID (109) This error has occurred more than 20 times, will not be displayed



# SEQUENCE LISTING

<110> Milich, David R.  
 Billaud, Jean-Noel

<120> Hepatitis B Virus Core Proteins as Vaccine Platforms and Methods  
 of Use Thereof

<130> VACCINE-08820

<140> 10/566,322

<141> 2006-01-26

<160> 256

<170> PatentIn version 3.2

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<211> 188

<212> PRT

<213> Woodchuck hepatitis virus

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 1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp  
 20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys  
 35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu  
 50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln  
 65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys  
 85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln  
 100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr  
 115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro

130

135

140

Glu His Thr Val Ile Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser  
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165 170 175

Arg Arg Arg Arg Ser Gln Ser Pro Ser Ala Asn Cys  
180 185

<210> 2  
<211> 39  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 2

Arg Arg Arg Gly Gly Ala Arg Ala Ser Arg Ser Pro Arg Arg Arg Thr  
1 5 10 15

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser  
20 25 30

Gln Ser Pro Ser Ala Asn Cys  
35

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<213> Woodchuck hepatitis virus

<400> 3

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<210> 4  
<211> 5  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 4

Arg Arg Arg Arg Cys  
1 5

<210> 5

<211> 4  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 5

Lys Lys Lys Cys  
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<210> 6  
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<212> PRT  
<213> Woodchuck hepatitis virus

<400> 6

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<210> 7  
<211> 23  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 7

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1 5 10 15

Gln Ser Pro Ser Ala Asn Cys  
20

<210> 8  
<211> 21  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 8

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Gln Ser Pro Ser Gln Ser  
1 5 10 15

Pro Ser Ala Asn Cys  
20

<210> 9  
<211> 20  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 9

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Gln Ser Ser Gln Ser Pro  
1 5 10 15

Ser Ala Asn Cys  
20

<210> 10  
<211> 19  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 10

Ala Ala Gly Gly Ala Arg Ala Ser Arg Ser Gln Ser Ser Gln Ser Ser  
1 5 10 15

Ala Asn Cys

<210> 11  
<211> 13  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 11

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1 5 10

<210> 12  
<211> 13  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 12

Ala Arg Gly Gly Ala Arg Ala Ser Gln Ser Ala Asn Cys  
1 5 10

<210> 13  
<211> 13  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 13

Arg Ala Gly Gly Ala Arg Ala Ser Gln Ser Ala Asn Cys  
1 5 10



<210> 14  
<211> 13  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 14

Ala Ala Gly Gly Ala Arg Ala Ser Gln Ser Ala Asn Cys  
1 5 10

<210> 15  
<211> 18  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 15

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser  
1 5 10 15

Gln Cys

<210> 16  
<211> 18  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 16

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Pro Ser Ala  
1 5 10 15

Asn Cys

<210> 17  
<211> 17  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 17

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Ser Ala Asn  
1 5 10 15

Cys

<210> 18

<211> 15  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 18

Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Ser Ala Asn Cys  
1 5 10 15

<210> 19  
<211> 16  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 19

Ala Ala Gly Arg Ser Pro Ser Gln Ser Ser Gln Ser Ser Ala Asn Cys  
1 5 10 15

<210> 20  
<211> 14  
<212> PRT  
<213> Woodchuck hepatitis virus

<400> 20

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Ser Ala Asn Cys  
1 5 10

<210> 21  
<211> 187  
<212> PRT  
<213> Ground squirrel hepatitis virus

<400> 21

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu  
1 5 10 15

Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp  
20 25 30

Thr Ala Ala Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys  
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu  
50 55 60

Leu Thr Arg Leu Ile Thr Trp Met Ser Glu Asn Thr Thr Glu Glu Val  
65 70 75 80

Arg Arg Ile Ile Val Asp His Val Asn Asn Thr Trp Gly Leu Lys Val  
85 90 95

Arg Gln Thr Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln His  
100 105 110

Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro  
115 120 125

Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu  
130 135 140

His Thr Val Ile Arg Arg Arg Gly Gly Ser Arg Ala Ala Arg Ser Pro  
145 150 155 160

Arg Arg Arg Thr Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg  
165 170 175

Arg Arg Arg Ser Gln Ser Pro Ala Ser Asn Cys  
180 185

<210> 22  
<211> 39  
<212> PRT  
<213> Ground squirrel hepatitis virus

<400> 22

Arg Arg Arg Gly Gly Ser Arg Ala Ala Arg Ser Pro Arg Arg Arg Thr  
1 5 10 15

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser  
20 25 30

Gln Ser Pro Ala Ser Asn Cys  
35

<210> 23  
<211> 23  
<212> PRT  
<213> Ground squirrel hepatitis virus

<400> 23

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Pro Ser Gln Ser Pro Ser

1 5 10 15

Gln Ser Pro Ala Ser Asn Cys  
20

<210> 24  
<211> 21  
<212> PRT  
<213> Ground squirrel hepatitis virus  
  
<400> 24

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Gln Ser Pro Ser Gln Ser  
1 5 10 15

Pro Ala Ser Asn Cys  
20

<210> 25  
<211> 20  
<212> PRT  
<213> Ground squirrel hepatitis virus  
  
<400> 25

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Gln Ser Ser Gln Ser Pro  
1 5 10 15

Ala Ser Asn Cys  
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<210> 26  
<211> 19  
<212> PRT  
<213> Ground squirrel hepatitis virus  
  
<400> 26

Ala Ala Gly Gly Ser Arg Ala Ala Arg Ser Gln Ser Ser Gln Ser Ala  
1 5 10 15

Ser Asn Cys

<210> 27  
<211> 14  
<212> PRT  
<213> Ground squirrel hepatitis virus

<400> 27

Arg Arg Gly Gly Ser Arg Ala Ala Ser Gln Ala Ser Asn Cys  
1 5 10

<210> 28

<211> 14

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 28

Ala Arg Gly Gly Ser Arg Ala Ala Ser Gln Ala Ser Asn Cys  
1 5 10

<210> 29

<211> 14

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 29

Arg Ala Gly Gly Ser Arg Ala Ala Ser Gln Ala Ser Asn Cys  
1 5 10

<210> 30

<211> 14

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 30

Ala Ala Gly Gly Ser Arg Ala Ala Ser Gln Ala Ser Asn Cys  
1 5 10

<210> 31

<211> 18

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 31

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Arg Glu Ser  
1 5 10 15

Gln Cys

<210> 32

<211> 18

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 32

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Pro Ala Ser  
1 5 10 15

Asn Cys

<210> 33

<211> 17

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 33

Ala Ala Gly Arg Ser Pro Ser Gln Ser Pro Ser Gln Ser Ala Ser Asn  
1 5 10 15

Cys

<210> 34

<211> 15

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 34

Ala Ala Gly Arg Ser Gln Ser Pro Ser Gln Ser Ala Ser Asn Cys  
1 5 10 15

<210> 35

<211> 16

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 35

Ala Ala Gly Arg Ser Pro Ser Gln Ser Ser Gln Ser Ala Ser Asn Cys  
1 5 10 15

<210> 36

<211> 14

<212> PRT

<213> Ground squirrel hepatitis virus

<400> 36

Ala Ala Gly Arg Ser Gln Ser Ser Gln Ser Ala Ser Asn Cys

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<211> 567
<212> DNA
<213> Woodchuck hepatitis virus

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gagctaacag gtagggaaca ttgctctccg caccatacag ctattagaca agcttttagta 180
tgctgggatg aattaactaa attgatagct tggatgagct ctaacataac ttctgaacaa 240
gtaagaacaa tcattgtaaa tcatgtcaat gatacctggg gacttaaggt gagacaaagt 300
ttatgggtttc atttgtcatg tctcactttc ggacaacata cagttcaaga attttttagta 360
agttttggag tatggatcag gactccagct ccatatagac ctctaatagc acccattctc 420
tcgactcttc cggaacatac agtcattagg agaagaggag gtgcaagagc ttctaggtcc 480
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<210> 38
<211> 149
<212> PRT
<213> Woodchuck hepatitis virus
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Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp  
20 25 30

Thr Ala Thr Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys  
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Asp Glu  
50 55 60

Leu Thr Lys Leu Ile Ala Trp Met Ser Ser Asn Ile Thr Ser Glu Gln  
65 70 75 80

Val Arg Thr Ile Ile Val Asn His Val Asn Asp Thr Trp Gly Leu Lys  
85 90 95

Val Arg Gln Ser Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln  
100 105 110

His Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr  
115 120 125

Pro Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro  
130 135 140

Glu His Thr Val Ile  
145

<210> 39  
<211> 564  
<212> DNA  
<213> Ground squirrel hepatitis virus

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gaattaacag gtagggagca ttgttctcct catcactactg ctattagaca ggccttagtg 180  
tgttgggaag aattaactag attaattaca tggatgagtg aaaatacaac agaagaagtt 240  
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tttgagatg ggattagaac tccagctcct tatagaccac ctaatgcacc cattttatca 420  
actcttccgg aacatacagt cattaggaga agaggaggtt caagagctgc taggtcccc 480  
cgaagacgca ctccctctcc tcgcaggaga aggtctcaat caccgcgtcg cagacgtct 540  
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<210> 40  
<211> 148  
<212> PRT  
<213> Ground squirrel hepatitis virus

<400> 40

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ser Ser Tyr Gln Leu Leu  
1 5 10 15



Asn Phe Leu Pro Leu Asp Phe Phe Pro Asp Leu Asn Ala Leu Val Asp  
20 25 30

Thr Ala Ala Ala Leu Tyr Glu Glu Glu Leu Thr Gly Arg Glu His Cys  
35 40 45

Ser Pro His His Thr Ala Ile Arg Gln Ala Leu Val Cys Trp Glu Glu  
50 55 60

Leu Thr Arg Leu Ile Thr Trp Met Ser Glu Asn Thr Thr Glu Glu Val  
65 70 75 80

Arg Arg Ile Ile Val Asp His Val Asn Asn Thr Trp Gly Leu Lys Val  
85 90 95

Arg Gln Thr Leu Trp Phe His Leu Ser Cys Leu Thr Phe Gly Gln His  
100 105 110

Thr Val Gln Glu Phe Leu Val Ser Phe Gly Val Trp Ile Arg Thr Pro  
115 120 125

Ala Pro Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro Glu  
130 135 140

His Thr Val Ile  
145

<210> 41  
<211> 183  
<212> PRT  
<213> Human hepatitis B virus

<400> 41

Met Asp Ile Asp Pro Tyr Lys Glu Phe Gly Ala Thr Val Glu Leu Leu  
1 5 10 15

Ser Phe Leu Pro Ser Asp Phe Phe Pro Ser Val Arg Asp Leu Leu Asp  
20 25 30

Thr Ala Ser Ala Leu Tyr Arg Glu Ala Leu Glu Ser Pro Glu His Cys  
35 40 45

Ser Pro His His Thr Ala Leu Arg Gln Ala Ile Leu Cys Trp Gly Glu

50

55

60

Leu Met Thr Leu Ala Thr Trp Val Gly Val Asn Leu Glu Asp Pro Ala  
65 70 75 80

Ser Arg Asp Leu Val Val Ser Tyr Val Asn Thr Asn Met Gly Leu Lys  
85 90 95

Phe Arg Gln Leu Leu Trp Phe His Ile Ser Cys Leu Thr Phe Gly Arg  
100 105 110

Glu Thr Val Ile Glu Tyr Leu Val Ser Phe Gly Val Trp Ile Arg Thr  
115 120 125

Pro Pro Ala Tyr Arg Pro Pro Asn Ala Pro Ile Leu Ser Thr Leu Pro  
130 135 140

Glu Thr Thr Val Val Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr  
145 150 155 160

Pro Ser Pro Arg Arg Arg Arg Ser Gln Ser Pro Arg Arg Arg Arg Ser  
165 170 175

Gln Ser Arg Glu Ser Gln Cys  
180

&lt;210&gt; 42

&lt;211&gt; 34

&lt;212&gt; PRT

&lt;213&gt; Human hepatitis B virus

&lt;400&gt; 42

Arg Arg Arg Gly Arg Ser Pro Arg Arg Arg Thr Pro Ser Pro Arg Arg  
1 5